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original claims 1-11 replaced by amended claims 1-10 (2 pages)]

Claims

1. Force sensor (1) including a support (2) of two arms carrying an longitudinal electromechanical element (3), whose electric properties are changeable by a mechanical deformation (Δx) due to a force (F);

characterised in that

the electromechanical element is a nanostructure (3) and an actuator is provided in order to transmit a force (F) to the nanostructure (3).

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2. Force sensor (1) according to claim 1;

characterised in that

the nanostructure (3) is either a nanotube or a carbon nanotube or bor-nitride nanotubes or a quasi one-dimensional (1D) nanostructure.

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3. Force sensor (1) according to claim 1 or 2;

characterised in that

the changeable electric property is the conductance.

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4. Force sensor (1) according to anyone of the claims 1 to 3;

characterised in that

the support (2) is U-shaped.

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5. Force sensor (1) according to anyone of the claims 1 to 4;

characterised in that

each arm (2) is provided with a cusp (5), on which the nanostructure (3) is mounted.

6. Force sensor (1) according to anyone of the claims 1 to 5;

characterised in that

a movable mass (7, m) provided with a tip (11) is arranged

5 between the arms (4), where the mass (7) is movable due to an acting acceleration (a) and due to the resulting force (F) the tip (11) acts on the nanostructure (3).

7. Force sensor (1) according to anyone of the claims 1

10 to 6;

characterised in that

a second nanostructure (10) is carried by the arms (4) in order to compensate environmental effects.

15 8. Force sensor (1) according to claim 7;

characterised in that

each arm (2) is provided with a further cusp (5), on which the second nanostructure (10) is mounted.

20 9. Force sensor (1) according to claim 8;

characterised in that

each arm (2) is provided with an insulation (9) in order to electrically separate the nanostructure (3, 10).

25 10. Force sensor (1) according to anyone of the claims 7 to 9;

characterised in that

the second nanostructure (10) is either a nanotube or a carbon nanotube or a quasi one-dimensional nanostructure.

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